



# **Battery Shelf-Life What Is It?**

**10<sup>th</sup> Government Industry  
Shelf-Life Symposium  
San Diego, CA  
21-23 October 2003**

# Shelf-Life Program Objectives

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- **Timely delivery of product to customer that meets user requirements**
  - **Lowest Cost**
  - **Highest Reliability**

# Battery Shelf-Life Issues

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- **Many different battery types, chemistries, and associated characteristics**
- **Variation in knowledge of battery characteristics within shelf-life community**
- **Differences in understanding or interpretation of shelf-life**

# Definitions

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**Shelf-Life** - Length of time a battery is required to last under storage conditions and remain capable of meeting mission requirements

**Service-Life** - Useful life of a battery for mission application from the time it is placed in service

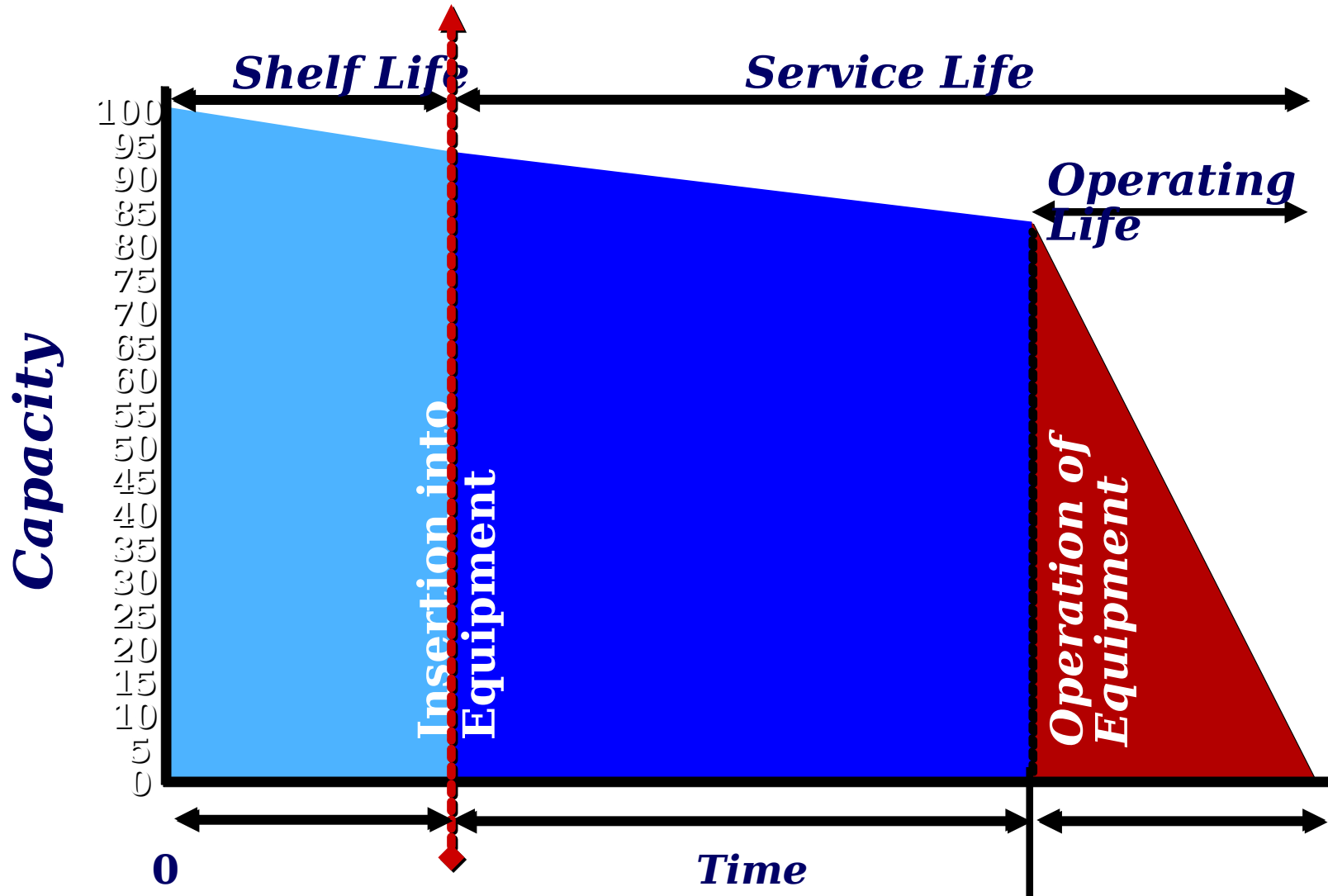
**Capacity** - Ability of a battery to provide a sustained current for a given duration of time (Ah) until voltage reaches specified lower limit (cutoff voltage)

**Operating Life** - Time required for battery voltage to remain above cutoff voltage under mission loading

**Self Discharge** - Process in which battery discharges (loses capacity) due to internal chemical reactions without an external load applied



# Battery Life



## Bottom Line

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**If items are stored (regardless of whether by acquisition activity or end user), the condition of the inventory must be understood**



# Battery Shelf-Life Sub-Committee

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## Goals

- \* Evaluate and enhance the life cycle process for batteries as it relates to shelf-life**
- \* Recommend actions to resolve issues and problem identified by DoD customers**
- \* Recommend procedural and process changes to enhance program management**
- \* Recommend policy changes to DoD 4140.27 and other policy documents**



# Battery Shelf-Life

## Sub-Committee

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### *Focus Areas*

- \* **Acquisition issues affecting shelf-life & quality**
- \* **Validate and standardize shelf-life coding in DoD**
- \* **Establish standards and procedures for disposal and returns**
- \* **Update and coordinate battery storage standards, including training at all levels**
- \* **Procedure for military unique shelf-life problems**
- \* **Battery reference material readily available to all users**





# Battery Shelf-Life Sub-Committee

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## *Focus Areas*

- \* **Standardization of batteries**
- \* **Establish and standardize testing and identify technical centers**
- \* **Standardize marking and packaging and with commercial practice where possible**
- \* **Standardize buying efforts between agencies**
- \* **Establish yearly joint services battery conference**

# Current Events

- **Lt Gen Hanlon - USMC Combat Development Command: “We Must Manage Shelf-Life Issues.”**
- **Lt. Cmdr. John LaTulip, U.S. Central Command’s maintenance branch: “It Was a difficult time for us... [It was] probably one of the most difficult times for us with any commodity”**
- **RFID tags on cases and pallets by January 2005**



# Current Issues

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- BA-5590 Shelf-Life Extension**
- TVM batteries**
- This all puts added emphasis on - A Comprehensive Battery Management Plan**



# ***BA-5590 SHELF LIFE EXTENSION***

**BA-5590 LITHIUM SO<sub>2</sub> BATTERY**

**MANY USES**

**HIGH VOLUME**

**SHELF LIFE OF FIVE YEARS**

**CELLS CAPABLE OF UP TO TEN YEARS UNDER  
PROPER STORAGE  
CONDITIONS**

**OFTEN LESS THAN TWO YEARS OF SHELF LIFE  
LEFT WHEN RECEIVED**





# ***BA-5590 SHELF LIFE EXTENSION***

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## **MARINE CORPS PRE-POSITION SHIP PROGRAM**

**ON PRE-POSITIONS EQUIPMENT AND BATTERIES  
SHIPS**

**DEPLOYS THEM FOR UP TO THIRTY SIX  
MONTHS**

**ALL BATTERIES MUST BE SERVICABLE FOR A  
MINIMUM OF THIRTY SIX MONTHS**

**PROBLEM: PURCHASING AND DISPOSING OF  
THOUSANDS OF BATTERIES**





# ***BA-5590 SHELF LIFE EXTENSION***

**MARINE CORPS PRE-POSITION SHIP PROGRAM**

**THIRTEEN SHIPS TOTAL IN THREE  
SQUADRONS**

**USUALLY 3500 BA-5590 BATTERIES PER  
SHIP**

**COSTS CAN BE RADICALLY REDUCED BY  
EXTENDING SHELF LIFE AND AVOIDING  
PURCHASE**

*Harnessing the Power of Technology for the Warfighter*



# ***BA-5590 SHELF LIFE EXTENSION***

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**CRANE CURRENTLY WORKING WITH MARINE CORPS**

**SELECT SAMPLES FROM RETURNING PRE-  
POSITION SHIPS**

**EXAMINE FOR PHYSICAL CHANGES**

**CONDUCT ELECTRICAL TESTS**

**RELEASE FOR ADDITIONAL CYCLE**

**CHECK ELECTRICAL PERFORMANCE OF  
ADDITIONAL SAMPLES ANNUALLY WHILE  
DEPLOYED**



# ***BA-5590 SHELF LIFE EXTENSION***

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## **RESULTS**

**21 LOTS CHECKED SINCE 1997**

**1 PROBLEM LOT REMOVED FROM SHIPS**

**\$ 5M+ COST AVOIDANCE TO DATE**

**OTHER SERVICES INTERESTED**

